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Attorney Docket No: MCTA002/02US **PATENT**

Express Mail Label Number: EL514031602US

Date of Deposit: September 29, 2000

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Date: September 29, 2000 By: Vlad Skliba

Vladimir Skliba

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of Richard V. HALBERT, et al. Examiner: 2773

Continuation of Serial No.: 09/519,023 Art Unit: Unknown

Parent Filed: March 3, 2000

For: DYNAMIC MARKET EQUILIBRIUM MANAGEMENT SYSTEM, PROCESS AND ARTICLE OF MANUFACTURE

Box Patent Application
Commissioner for Patents
Washington, D.C. 20231

CONTINUATION APPLICATION REQUEST (37 CFR § 1.53(b))

This is a request for a continuation application under 37 CFR 1.53(b). The instant application is a continuation application of prior application number 09/519,023, filed on March 3, 2000, entitled "DYNAMIC MARKET EQUILIBRIUM MANAGEMENT SYSTEM, PROCESS AND ARTICLE OF MANUFACTURE," which is a continuation of application Serial Number 09/281,859, now U.S. Patent No. 6,101,484, listing as inventors Richard V. HALBERT, Niklas GUSTAFSSON, and John M. THRUN.

Fee Calculation (After Preliminary Amendment)

FOR:	Number Filed	Less	Number Extra	Small Entity Rate	Fee	Other Than a Small Entity Rate	Fee	Total Claim Fee
Total Claims	46	- 20	26	* $9		* $18		$234.00
Independent Claims	6	- 3	3	* $39		* $78		$117.00
Multiple Dependent Claims Not Previously Presented					$		$	
Basic Fee					$345		$690	345.00
TOTAL								**$696.00**

Enclosed are:

[X] A preliminary amendment;

[X] A copy of specification from parent application 09/519,023;

[X] Copies of drawings from parent application 09/519,023, ten (10) sheets, comprising Figs. 1 to 7;

[X] A copy of the executed Declaration and Power of Attorney from parent application no. 09/519,023;

[X] A copy of the executed Verified Small Entity Statement from parent application 09/519,023;

[X] A check in the amount of $696.00; and

[X] Return receipt postcard.

The Commissioner is hereby authorized to charge any underpayment of the following fees associated with this communication, or credit any overpayment to Deposit Account No. 03-3117:

[X] Any national application filing fees under 37 CFR 1.16.

[X] Any patent application processing fees under 37 CFR 1.17.

Cooley Godward LLP
Attn: Patent Group
Five Palo Alto Square
3000 El Camino Real
Palo Alto, CA 94306-2155
Tel: (650) 843-5000
Fax: (650) 857-0663

Respectfully submitted,

COOLEY GODWARD LLP

By: _____
Thomas L. Ewing
Reg. No. 34,328

TLE:dm

Attorney Docket No: MCTA-002/00US **PATENT**

Applicant or Patentee: Tom Van Horn
Serial No.: **09/281,859** Patent No.:
Filed: March 31, 1999 Issued:
For: **DEMAND AGGREGATION THROUGH ONLINE BUYING GROUPS**

VERIFIED STATEMENT CLAIMING SMALL ENTITY STATUS
37 CFR SECTIONS 1.9(f) & 1.27(c) - SMALL BUSINESS CONCERN

I hereby declare that I am:

[] the owner of the small business concern identified below:
[X] an official of the small business concern empowered to act on behalf of the concern identified below:

Name of Small Business Concern: Mercata, Inc.
Address of Small Business Concern: 110 - 110 Avenue North East, Suite 390, Bellevue, Washington 98004-5840

I hereby declare that the above-identified small business concern qualifies as a small business concern as defined in 13 CFR 121.12, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees under 35, United States Code 41(a) and (b), in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention identified above and described in

[ ] the specification filed herewith
[X] the application identified above
[ ] the patent identified above.

If the rights held by the above-identified small business concern are not exclusive, each individual, concern or organization having rights to the invention is listed below* and no rights to the invention are held by any person, other than the inventor, who could not qualify as an independent inventor under 37 CFR 1.9(c) or by any concern which would

not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

Name:
Address:

[ ] Individual [ ] Small Business Concern [ ] Nonprofit Organization

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements are made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Signature	Tom Van Horn
Date	4/13/99
Name of Person Signing	Tom Van Horn
Title of person other than owner	President and CEO
Address of person signing	110 – 110 Avenue North East, Suite 390 Bellevue, Washington 98004-5840

Attorney Docket No: MCTA-002/02US **PATENT**

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Date: September 29, 2000 By: _____
Vladimir Skliba

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of Richard V. Halbert, et al.

Serial No.:	Unknown	Examiner:	Unknown
Filed:	Herewith	Art Unit:	Unknown

For: DYNAMIC MARKET EQUILIBRIUM MANAGEMENT SYSTEM, PROCESS AND ARTICLE OF MANUFACTURE

Continuation of :

In re application of Richard V. HALBERT, et al.			
Serial No.:	09/519,023	Examiner:	Unknown
Filed:	March 3, 2000	Art Unit:	2773
For:	DYNAMIC MARKET EQUILIBRIUM MANAGEMENT SYSTEM, PROCESS AND ARTICLE OF MANUFACTURE		

Commissioner for Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Applicants respectfully request consideration of this application as amended herein.

IN THE SPECIFICATION

Please insert the following:

Page 1, line 1, please insert --This application is a continuation of application Serial Number 09/519,023, filed on March 3, 2000, which is a continuation of application Serial Number 09/281,859, now U.S. Patent No. 6,101,484.--

IN THE CLAIMS

Kindly cancel claims 1-34 of the 09/281,859 application and add the following new claims:

35. A system for modifying a price curve in order to approach a seller's sales goal for a featured item in an on-line buying-group sale, comprising:

(a) an e-commerce server data processing system, the e-commerce server data processing system including e-commerce server software executable on the e-commerce server data processing system and configured to define the on-line buying-group sale for the featured item;

(b) a storage device coupled to the e-commerce server data processing system and having stored therein a data repository including at least price data for the featured item, quantity data for the featured item and buyer-submitted offer data; and

(c) a merchandising staff data processing system coupled to the storage device, the merchandising staff data processing system including software executable on the merchandising staff data processing system and configured to receive merchandising staff inputs for defining the on-line buying-group sale for the featured item, the software including a market equilibrium manager configured to modify a price curve for the featured item in the on-line buying-group sale by using the price data for the featured item, the quantity data for the featured item, and the buyer-submitted offer data in the data repository in order to approach the seller's sales goal.

36. The system of claim 35 wherein the seller's sales goal for the on-line buying-group sale is customer acquisition, the market equilibrium manager further configured to modify the price curve for the featured item so as to increase a range of acceptable buyer-submitted offers, thus reducing a gross margin for the on-line buying-group sale and increasing market share.

37. The system of claim 35 wherein the seller's sales goal for the on-line buying-group sale is increasing sales revenue for the on-line buying-group sale, the market equilibrium manager further configured to modify the price curve for the featured item so as to increase a range of acceptable buyer-submitted offers, thus reducing a gross margin for the on-line buying-group sale and increasing sales revenue for the on-line buying-group sale.

38. The system of claim 35 wherein the seller's sales goal for the on-line buying-group sale is inventory leveling of the featured item, the market equilibrium manager further configured to modify the price curve for the featured item so as to increase a range of acceptable buyer-submitted offers, thus increasing sales of the featured item and thereby reducing inventory of the featured item.

39. The system of claim 35 wherein the seller's sales goal for the on-line buying-group sale is maximizing gross profit margins for sales of the featured item, the market equilibrium manager further configured to accept modifications of the price curve for the featured item that adjust a range of acceptable buyer-submitted offers to a level that maximizes the seller's gross profit margin from sales of the featured item.

40. The system of claim 35 wherein once the seller's sales goal has been approached, the seller has at least another sales goal for the on-line buying-group sale, the market equilibrium manager further configured to modify a price curve for the featured item in the on-line buying-group sale by using the price data for the featured item, the quantity data for the featured item, and the buyer-submitted offer data in the data repository in order to approach the seller's at least another sales goal.

41. The system of claim 35 in which the software is further configured to include data entry tools that establish a start time and an end time for the on-line buying-group sale, at least minimum quantities of the featured item and a starting price for the featured item.

42. The system of claim 41 in which the software is further configured by including a display component configured to manipulate and display data associated with the on-line buying-group sale on the merchandising staff data processing system.

43. The system of claim 42 in which the e-commerce server software is further configured to store price and quantity data of buyer-submitted offer inputs as the offer data in the data repository and the market equilibrium manager is further configured to obtain updated price data and the offer data from the data repository, the display component being configured to display the price curve, an offer histogram, and other information suggesting a price point at which the seller's sales goal is achieved.

44. The system of claim 43 in which the display component is further configured to allow merchandising staff inputs to modify the price curve by direct manipulation of the price curve display.

45. The system of claim 44 in which the software is configured to translate the modified price curve to data with a data format for storage in the data repository.

46. The system of claim 45 in which the display component is further configured to display a yield amount from sale of the featured item based on data from the data repository.

47. The system of claim 46 in which the display component is further configured to modify the displayed yield amount from sale of the featured item as the price curve is modified.

48. A system for testing price sensitivity for a featured item in an on-line buying-group sale, comprising:

(a) an e-commerce server data processing system, the e-commerce server data processing system including e-commerce server software executable on the e-commerce server data processing system and configured to define the on-line buying-group sale for the featured item;

(b) a storage device coupled to the e-commerce server data processing system and having stored therein a data repository including at least price data for the featured item, quantity data for the featured item and buyer-submitted offer data; and

(c) a merchandising staff data processing system coupled to the storage device, the merchandising staff data processing system including software executable on the merchandising staff data processing system, the software including a market equilibrium manager configured to provide a price sensitivity output that includes buyer offers for the featured item across the price data for the featured item in the data repository.

49. The system of claim 48 wherein the price sensitivity output has a graphical format.

50. A method for modifying a price curve and approaching a seller's sales goal for an on-line buying-group sale for a featured item, comprising:

(a) defining an on-line buying-group sale for a featured item;

(b) storing in a storage device a data repository including at least price and quantity data for the featured item;

(c) accepting inputs from prospective buyers in the form of offers for the featured item;

(d) using the inputs from the prospective buyers to modify the data repository; and

(e) receiving merchandising staff inputs utilizing a market equilibrium manager configured to modify a price curve for the featured item in the on-line buying-group sale by utilizing the price and quantity data for the featured item in the data repository and the inputs from the prospective buyers in order to approach the seller's sales goal.

51. The method of claim 50 wherein the seller's sales goal for the on-line buying-group sale is customer acquisition, the method further comprising:

modifying the price curve for the featured item using the market equilibrium manager so as to increase a range of acceptable buyer-submitted offers from a first range to a second range, wherein the second range is greater than the first range, thus reducing a gross margin for the on-line buying-group sale and increasing market share.

52. The method of claim 50 wherein the seller's sales goal for the on-line buying-group sale is increasing sales revenue for the on-line buying-group sale, the method further comprising:

modifying the price curve for the featured item using the market equilibrium manager so as to increase a range of acceptable buyer-submitted offers from a first range to a second range, wherein the second range is greater than the first range, thus reducing a gross margin for the on-line buying-group sale and increasing sales revenue for the on-line buying-group sale.

53. The method of claim 50 wherein the seller's sales goal for the on-line buying-group sale is inventory leveling of the featured item, the method further comprising:

modifying the price curve for the featured item using the market equilibrium manager so as to increase a range of acceptable buyer-submitted offers, thus increasing sales of the featured item and thereby reducing inventory of the featured item.

54. The method of claim 50 wherein the seller's sales goal for the on-line buying-group sale is maximizing gross profit margins for sales of the featured item, the method further comprising:

modifying the price curve for the featured item using the market equilibrium manager so as to adjust a range of acceptable buyer-submitted offers for the featured item to a level that maximizes the seller's gross profit margin from sales of the featured item.

55. The method of claim 50 wherein once the seller's sales goal has been approached, the seller has at least another sales goal for the on-line buying-group sale, the method further comprising:

receiving merchandising staff inputs utilizing a market equilibrium manager configured to modify a price curve for the featured item in the on-line buying-group sale by utilizing the price and quantity data for the featured item in the data repository and the inputs from the prospective buyers in order to approach the seller's at least another sales goal.

56. The method of claim 50 in which the on-line buying-group sale is defined by using data entry tools to establish a start time and an end time for the on-line buying-group sale, at least minimum quantities of the featured item and a starting price for the featured item.

57. The method of claim 56 further comprising:

(f) managing, adjusting and displaying data associated with the on-line buying-group sale.

58. The method of claim 57 further comprising:

(g) obtaining updated price data and offer data from the data repository and displaying the price curve and an offer histogram.

59. The method of claim 58 further comprising:

(h) receiving merchandising staff inputs to modify the price curve display by direct manipulation of the price curve display.

60. The method of claim 59 further comprising:

(i) translating the modified price curve to data with a data format for storage in the data repository.

61. The method of claim 60 further comprising:

(j) displaying a yield amount from sale of the featured item based on data from the data repository.

62. The method of claim 61 further comprising:

(k) modifying the displayed yield amount from sale of the featured item as the price curve is modified.

63. A method for testing price sensitivity for a featured item in an on-line buying-group sale, comprising:

(a) defining an on-line buying-group sale for a featured item;

(b) storing in a storage device a data repository including at least price and quantity data for the featured item;

(c) accepting inputs from prospective buyers in the form of buyer offers for the featured item; and

(d) producing a price sensitivity output that provides buyer offers for the featured item across the price data for the featured item in the data repository.

64. The method of claim 63 wherein the price sensitivity output has a graphical format.

65. An article of manufacture, which comprises a computer readable medium having stored therein a computer program for modifying a price curve and approaching a seller's sales goal in an on-line buying-group sale for a featured item, the computer program comprising:

(a) a first code segment which, when executed on a computer, defines an on-line buying-group sale for a featured item;

(b) a second code segment which, when executed on a computer, stores in a storage device a data repository including at least price and quantity data for the featured item;

(c) a third code segment which, when executed on a computer, accepts inputs from prospective buyers in the form of offers for the featured item;

(d) a fourth code segment which, when executed on a computer, uses the inputs from the prospective buyers to modify the data repository; and

(e) a fifth code segment which, when executed on a computer, receives merchandising staff inputs utilizing a market equilibrium manager to modify a price curve and approach the seller's sales goal for the featured item in the on-line buying-group sale by utilizing the price and quantity data for the featured item in the data repository and the inputs from the prospective buyers.

66. The article of manufacture of claim 65 wherein the seller's sales goal for the on-line buying-group sale is customer acquisition, the fifth code segment further defined to:

modify the price curve for the featured item using the market equilibrium manager so as to increase a range of acceptable buyer-submitted offers from a first range to a second range, wherein the second range is greater than the first range, thus reducing a gross margin for the on-line buying-group sale and increasing market share.

67. The article of manufacture of claim 65 wherein the seller's sales goal for the on-line buying-group sale is increasing sales revenue, the fifth code segment further defined to:

modify the price curve for the featured item using the market equilibrium manager so as to increase a range of acceptable buyer-submitted offers from a first range to a second range, wherein the second range is greater than the first range, thus reducing a gross margin for the on-line buying-group sale and increasing sales revenue for the on-line buying-group sale.

68. The article of manufacture of claim 65 wherein the seller's sales goal for the on-line buying-group sale is inventory leveling of the featured item, the fifth code segment further defined to:

modify the price curve for the featured item using the market equilibrium manager so as to increase a range of acceptable buyer-submitted offers, thus increasing sales of the featured item and thereby reducing inventory of the featured item.

69. The article of manufacture of claim 65 wherein the seller's sales goal for the on-line buying-group sale is maximizing gross profit margins for sales of the featured item, the fifth code segment further defined to:

modify the price curve for the featured item using the market equilibrium manager so as to attain a range of acceptable buyer-submitted offers for the featured item at a level that maximizes the seller's gross profit margin from sales of the featured item.

70. The article of manufacture of claim 65 wherein once the seller's sales goal has been approached, the seller has at least another sales goal for the on-line buying-group sale, the fifth code segment further defined to:

receive merchandising staff inputs utilizing the market equilibrium manager configured to modify the price curve for the featured item in the on-line buying-group sale by utilizing the price and quantity data for the featured item in the data repository and the inputs from the prospective buyers in order to approach the seller's at least another sales goal.

71. The article of manufacture of claim 65 in which the first code segment includes code for receiving merchandising staff inputs for defining the on-line buying-group sale for the featured item.

72. The article of manufacture of claim 71 in which the first code segment is configured to define the on-line buying-group sale for the featured item by establishing a start time and an end time for the on-line group-buying sale, at least minimum quantities of the featured item offered and a starting price for the featured item.

73. The article of manufacture of claim 72 in which the computer program additionally comprises:

(f) a sixth code segment for manipulating and displaying data associated with the on-line buying-group sale.

74. The article of manufacture of claim 73 in which the computer program additionally comprises:

(g) a seventh code segment for obtaining updated price data and the offers from the data repository and displaying the price curve and an offer histogram.

75. The article of manufacture of claim 74 in which the computer program further comprises:

(h) an eighth code segment for receiving merchandising staff inputs to modify the price curve display by direct manipulation of the price curve display.

76. The article of manufacture of claim 75 in which the computer program further comprises:

(i) a ninth code segment for translating the modified price curve to data with a data format for storage in the data repository.

77. The article of manufacture of claim 76 in which the computer program additionally comprises:

(j) a tenth code segment for displaying a yield amount from sale of the featured item based on data from the data repository.

78. The article of manufacture of claim 77 in which the computer program additionally comprises:

(k) an eleventh code segment for modifying the displayed yield amount from sale of the featured item as the price curve is modified.

79. An article of manufacture, which comprises a computer readable medium having stored therein a computer program for testing price sensitivity for a featured item in an on-line buying-group sale, the computer program comprising:

(a) a first code segment which, when executed on a computer, defines an on-line buying-group sale for a featured item;

(b) a second code segment which, when executed on a computer, stores in a storage device a data repository including at least price and quantity data for the featured item;

(c) a third code segment which, when executed on a computer, accepts inputs from prospective buyers in the form of offers for the featured item; and

(d) a fourth code segment which, when executed on a computer, uses the inputs from the prospective buyers to produce a price sensitivity output that provides buyer offers for the featured item across the price data for the featured item in the data repository.

80. The article of manufacture of claim 79 wherein the fourth code segment is configured to produce the price sensitivity output in a graphical format.

REMARKS

Claims 35-80 are pending in the present application. Claims 35-80 have been added in this amendment, and claims 1-34 of the grandparent application 09/281,859 (now U.S. Patent 6,101,484) have been cancelled.

The specification has been amended to claim the benefit of the priority date of the parent application 09/519,023, which itself claims the benefit of the priority date of the 09/281,859 application.

The claims do not constitute the addition of new matter and full support may be found within the disclosure as originally filed. For example, the various business goals that may be approached through use of embodiments of the instant invention are discussed, among other places, at page 2, lines 1-21 and page 4, lines 1-29.

Entry of the above is respectfully requested. An early and favorable examination of the application on its merits is earnestly solicited. The Examiner is encouraged to

contact the undersigned by telephone to discuss the application, if desired. If the Examiner notes any informalities in the claims, he is encouraged to contact the undersigned to correct expediently any such informalities by telephone.

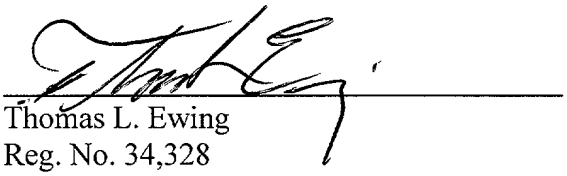
In light of the foregoing remarks, the Applicants respectfully submit that all pending claims are allowable. Accordingly, the Applicants respectfully request the Examiner to timely allow all pending claims.

The Commissioner is hereby authorized to charge any underpayment of the following fees associated with this communication, or credit any overpayment to Deposit Account No. 03-3117.

Cooley Godward LLP
Attn: Patent Group
Five Palo Alto Square
3000 El Camino Real
Palo Alto, CA 94306-2155
Tel: (650) 843-5000
Fax: (650) 857-0663
TLE:dm

Respectfully submitted,

COOLEY GODWARD LLP

By: 

Thomas L. Ewing
Reg. No. 34,328

DYNAMIC MARKET EQUILIBRIUM MANAGEMENT SYSTEM, PROCESS AND ARTICLE OF MANUFACTURE

BACKGROUND OF THE INVENTION

1. Field of the Invention.

The present invention relates to a dynamic market equilibrium management system for the sale of goods and services, also sometimes referred to herein as a "management system" or "market equilibrium manager." More particularly, it relates to such a dynamic market equilibrium management system for use in e-commerce applications, such as on-line buying groups of the type described and claimed in a related copending, commonly assigned application filed March 15, 1999 in the names of Tom Van Horn, Niklas Gustafsson and Dale Woodford, and entitled "Demand Aggregation Through Online Buying Groups" (Attorney Docket MCTA-001/00US), the disclosure of which is hereby incorporated by reference herein. The invention further relates to a user interface allowing more convenient and skillful data management for hypothetical situations and related applications.

2. Introduction to the Invention.

The above on-line buying groups invention provides a method and apparatus to globally locate, encourage and enable all buyers wishing to purchase a particular product or service within a given time frame to join forces in a buying group ("co-op") formed specifically to accomplish the desired purchase. The co-op will enable individual buyers to leverage their combined purchasing power to achieve an economic bargain far superior to that attainable by any one buyer acting alone. This superior bargain most often will be reflected in terms of a lower price.

That invention also provides a method and apparatus that allows each buyer an opportunity to increase the volume of any given co-op in order to further increase group buying power within a co-op. It also includes a mechanism through which buyers can form any number of special interest groups, provide their collective wisdom to dictate which products are featured in future co-ops, or even make a market for a given product or service.

Other key aspects of that invention include a means to allow unprecedented access to certain true market data and pricing information derived from co-op member input during the

life of each co-op. For example, all buyers wishing to join a co-op must submit a binding offer guaranteeing their willingness to purchase the featured item at or below some maximum price determined by each individual member. This collection of purchase offers provides valuable quantitative data regarding price sensitivity for the featured item. In addition, it permits real time yield management decisions that often will benefit both buyers and suppliers. Specifically, the invention provides data from which a supplier can be informed that if the product price is reduced by a specified amount, the co-op's pool of accepted offers - i.e., final sales - will increase by a specific quantity. The guaranteed increase in volume due to a reduced price would improve its overall yield. Under this scenario, both the co-op buyers and the product supplier benefit from the indicated price reduction.

The present invention provides a dynamic market equilibrium management system which permits one to quickly and conveniently define and achieve market equilibrium (i.e., the ideal point at which supply meets demand for a given product or service). When adapted for use with the related invention described above, it utilizes the true market data and pricing information made available through such related invention to allow more effective and skillful market management, such that market equilibrium can be quickly defined and achieved for any given co-op. While the present invention is especially adapted for use with the system, process and article of manufacture described and claimed in the related application, its features and advantages make it useful as well in a wide variety of other e-commerce applications and even for managing other markets which are not implemented in an on-line environment.

Other ways in which this invention provides unique benefits to market managers for the sale of goods and services in electronic commerce are set forth in various parts of this document below.

3. Background. (Prior art)

Historically there has been no way for a supplier to predict with certainty the price at which a product must be sold in order to increase sales volume by a specified amount. Under traditional sales models, pricing decisions are made based on estimates, such as anticipated product demand and presumed price sensitivity, in the hope that supply will approximate demand at the selected price. If a supplier of a particular item could rely on guaranteed purchase offers to increase volume at varying levels of acceptable sales prices and utilize a tool to quickly and skillfully define market equilibrium, such a tool would be extremely valuable to the supplier. Among other things, it would permit instantaneous, accurate yield

management decisions that often would encourage win-win price reductions. The supplier wins by improving his overall yield based on volume, and the buyer wins by getting a lower per unit price.

Further, existing sales models and tools do not offer suppliers a clearly superior means of quickly reducing large quantities of specific product inventory (such as a close out item) in a way that will permit both maximization of yield and fast movement of an extremely large quantity of product. Similarly, there exists no clearly superior sales channel through which a supplier can readily turn to swiftly create an extremely large, global market for a specific product to significantly increase market share for that product, in a format that permits skillful yield management.

It is also known in existing spreadsheet programs to recalculate derived values automatically from data changes entered into the spreadsheet. Display of such recalculated values facilitates evaluation of hypothetical "what if" scenarios for making business decisions. However, this is done by changing a value in a cell of the spreadsheet, resulting in recalculating all variable entries dependent on the variable changed. It is not easy for the user to see the global effect of such changes without a careful review of the recalculated spreadsheet or separate screens showing graphs derived from the recalculated spreadsheet. The result is a cumbersome iterative process in which the user must change a value in a cell of the spreadsheet, obtain a graph of the resulting dependent variable changes, determine whether those results are as desired, if not, go back to the spreadsheet and make another value change in a cell, redraw the graph, and so forth until desired results are achieved. The process is even more cumbersome if the user desires to add a line to a graph, which requires the generation of new cells in the spreadsheet.

Specific examples of e-commerce systems implemented on the Internet or other networks are disclosed in the following issued patents: U.S. Patent 4,789,928, issued December 6, 1988 to Fujisaki; U.S. Patent 5,794,207, issued August 11, 1998 to Walker et al.; U.S. Patent 5,797,127, issued August 18, 1998 to Walker et al.; U.S. Patent 5,835,896, issued November 10, 1998 to Fisher et al. and U.S. Patent 5,845,265, issued December 1, 1998 to Woolston.

Various examples of yield management systems and processes are disclosed in the following issued patents: U.S. Patent 5,729,700, issued March 17, 1998 to Melnikoff; U.S. Patent 5,270,921, issued December 14, 1993 to Hornick; U.S. Patent 5,255,184, issued October 19, 1993 to Hornick et al. and U.S. Patent 5,148,365, issued September 15, 1992 to Denbo.

4. Benefits of the invention.

In order to join a co-op, each buyer must determine the maximum price at which (or below) he or she is willing to purchase the featured item. Such amount is specified in his or her binding purchase offer. That offer is guaranteed by the buyer's credit card. All offers including the various amounts at which they are submitted are collected and summarized in a database. This process enables accurate, real-time yield management decisions which can be used to advocate a lower per unit price. For example, the business entity implementing the invention would be able to determine ideal market equilibrium based on true market data, and represent to a supplier that if the price were lowered by $X, the sales volume will increase by an additional 1,000 units. Although the per unit price would drop, the supplier's overall profit yield may increase due to the substantial increase in volume. Hence, this invention permits the business implementing the invention to quickly and meaningfully assess the forces of supply and demand and communicate conclusions based on true market data to suppliers in order to eliminate the uncertainty that would otherwise make suppliers reluctant to lower prices.

Further, this invention provides instantaneous yield management capabilities which enhance virtually all aspects of the related buying groups invention. For example, the related invention's method of globally creating buying groups on a purchase by purchase basis provides a unique method of quickly moving large quantities of specific products. For instance, a supplier might utilize that invention's sales platform to sell a substantial volume of one product for the specific purpose of increasing its market share. A supplier also could utilize the related invention as a platform for unloading a large volume of specific products nearing the end of their product life cycle. Suppliers also might utilize the related invention as a means to accomplish swift inventory leveling for cash flow or financial reporting purposes. All such applications of the related invention are significantly enhanced by this invention because it enables suppliers to accomplish these objectives in a format that quickly and conveniently defines market equilibrium, which, in turn, permits them to maximize yield in each such transaction.

In contrast to the cumbersome procedure described above for use of a spreadsheet program to study results of "what if" scenarios, the direct manipulation of graphical visualizations of data with the user interface of this invention produces the changes in the underlying tabular data directly, so that the user sees the results of changes directly on the visualized data, without having to move successively between tabular spreadsheet data and a

graph of that data. This direct versus indirect approach allows the much more convenient and skillful data manipulation for hypotheticals and similar situations.

Definitions

Certain terms as used herein are defined as follows:

Browser: A specific type of client system, referring to an HTTP client enabling the display of various forms of information originating at the server; also capable of sending information, such as requests and personal data, to the server at the request of the end user. A browser is not the only possible or intended client system. Our method and apparatus apply only to the server, and are not dependent on what form of client is used, only that some client exists as the means of input.

Co-op: For the purposes of this application, the term 'co-op' as used throughout is not intended to refer to the traditional cooperative form of business which is owned by all of its members. A business organization implementing this invention need not be organized as a cooperative. Instead, we use the term 'co-op' to refer to the online manifestation of buying groups who have committed to purchase a certain product within a specified price (i.e., at or below a maximum price). Co-ops are also occasionally referred to herein as 'buying groups,' 'buying co-ops' and 'product co-ops.'

Critical Mass: The volume of acceptable offers necessary before any purchase offers will be accepted. The critical mass may be specified by a supplier. It may also be the sales volume at which the starting co-op price is justified.

Current Price: The price stated as current at any given time during the co-op. One significance of the current price is that availability is guaranteed for offers at or above such price after critical mass is achieved.

E-commerce server: Is here used to refer to a specific server software system, residing on a set of CPUs, that is used to send information to the client system(s) and accepting input from said clients for the sole purpose of taking orders, whether they are for co-ops or not.

Ending Price: The price specified at the end of the co-op, which represents the price at which all offers are accepted.

Featured Product: Any product or product variant identified for sale through a co-op. For purposes of this application, the term 'featured product' includes any services which might be identified for sale through a co-op.

HTTP: The Hyper-Text Transfer Protocol.

HTTP server: A specific server software system, residing on a set of CPUs, which is used to communicate with client systems such as HTTP browsers. The HTTP server is only one means of communication between the client and server, and its inclusion in this discussion of our invention is not meant to imply that it is the only means of implementation of the invention.

Market Equilibrium: The ideal point at which supply for a given product or service meets demand for such product or service.

Offer or Purchase Offer: A binding, non-cancelable offer to purchase a featured product within a price range the maximum of which is specified by the buyer. Each such offer is guaranteed by the respective buyer's credit card at the time it is offered. Making an offer is a condition precedent to joining a co-op. The offer is either accepted or rejected at the close of the co-op.

Price Curve: A description of price as a function, in the mathematical sense, of the number of units. See Figures 3A-3E.

Product and Product Variant: A product is a set of items for sale, which all has a certain set of significant characteristics in common. For example, a particular brand and style of in-line skates, each having the same characteristics, such as design, brand, color, a left and a right skate sold together, etc. A product variant is a subset of a product. For example, size 5 and size 8 of a particular pair of in-line skates are different variants of the same product. As used herein, a product can be a tangible or intangible object or a service.

Server: The term 'server' is here used to refer to the set of hardware and software systems that are used to implement co-ops in accordance with this invention. These systems are to be distinguished from the client systems that are used by buyers to participate in co-ops. See Figures 2 and 4.

Server process: A computer program that is part of the server software systems, and which executes in its own address space, communicating with other processes via means defined by the operating system(s) of the hardware platforms. Unfortunately, it is necessary to use the term 'process' to describe other things than computer programs executing in their own address space in this application, so care has been taken to always use the term 'server process' when the latter is meant.

Starting Price: The price listed as the current price at the beginning of each co-op.

SUMMARY OF THE INVENTION

In accordance with a first aspect of the invention, a system for defining a price curve and approaching market equilibrium in an on-line buying co-op for a product includes an e-commerce server data processing system. The e-commerce server data processing system has e-commerce server software executable on the e-commerce server data processing system and configured to define an on-line buying co-op for a product. A storage device is coupled to the e-commerce data processing system and has stored therein a database including at least price and quantity data for the product. A merchandising staff client data processing system is coupled to said storage device. The merchandising staff client data processing system includes client software executable on the merchandising staff client data processing system and configured to receive merchandising staff inputs for defining the buyers' cooperative for the product. The client software includes a market equilibrium manager to establish a price curve for the product in the buyers' cooperative by utilizing the price and quantity data for the product in the database.

In a second aspect of the invention, a process for defining a price curve and approaching market equilibrium in an on-line buying co-op for a product includes defining an on-line buying co-op for a product. A database including at least price and quantity data for the product is stored in a storage device. Inputs from buyers to take offers for the product are accepted. The buyer inputs are used to modify the database. Merchandising staff inputs utilizing a market equilibrium manager are received to establish a price curve for the product in the on-line buying co-op by utilizing the price and quantity data for the product in the database.

In a third aspect of the invention an article of manufacture comprises a computer readable medium having stored therein a computer program for defining a price curve and approaching market equilibrium in an on-line buying co-op for a product. The computer program has a first code segment for defining a buying co-op for a product. A second code segment stores in a storage device a database including at least price and quantity data for the product. A third code segment accepts inputs from buyers to take offers for the product. A fourth code segment uses the buyer inputs to modify the database. A fifth code segment receives merchandising staff inputs utilizing a market equilibrium manager to establish a price curve for the product in the on-line buying co-op by utilizing the price and quantity data for the product in the database.

In a fourth aspect of the invention, a system for providing a graphical user interface for displaying data graphically includes a display, a data processing system coupled to the display and a storage device coupled to the data processing system and containing a database.

First software in the data processing system is configured to control the data processing system for providing a graphical display of data from the database. Second software in the data processing system is configured to receive user inputs for directly manipulating the graphical display of the data. Third software in the data processing system is configured to supply modified data based on the manipulation of the graphical display of the data to said database. Fourth software is coupled to the database for recalculating dependent variables of the modified data. Fifth software in the data processing system is configured to display feedback dependent variable data on said display with the graphical display of data from the database.

In a fifth aspect of the invention, a process for providing a graphical user interface displaying data graphically with a data processing system includes storing data in a database. A graphical display of data from the database is provided on a display device of the data processing system. User inputs to the data processing system are received for directly manipulating the graphical display of the data. Modified data based on the manipulation of the graphical display of the data is supplied to the database. Dependent variables of the modified data are recalculated. Feedback dependent variable data is displayed on the display device with the graphical display of data from the database.

In a sixth aspect of the invention, an article of manufacture includes a computer readable medium having stored therein a computer program for providing a graphical user interface displaying data graphically with a data processing system. The computer program has a first code segment for storing data in a database. A second code segment provides a graphical display of data from the database on a display device of the data processing system. A third code segment receives user inputs to the data processing system for directly manipulating the graphical display of the data. A fourth code segment supplies modified data based on the manipulation of the graphical display of the data to the database. A fifth code segment receives recalculated dependent variables of the modified data. A sixth code segment displays feedback dependent variable data on the display device with the graphical display of data from the database.

Introductory Description of the Method

Merchandising and yield management personnel will define each co-op by means of data entry. Such data entry is not limited to time prior to the opening of a co-op. The definition of a co-op, including its price curve, is subject to modification during its lifetime.

In fact, the ability to modify the co-op definition based on data gathered from offers to participate in a co-op is an essential aspect of the invention.

The attainment of the foregoing and related advantages and features of the invention should be more readily apparent to those skilled in the art, after review of the following more detailed description of the invention, taken together with the drawings, in which:

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a block diagram of an internetworked computer system for implementing the invention.

Figure 2 is a block diagram of software components for implementing the invention.

Figures 3A-3E is a set of sequential graphs of price curves useful for understanding operation of the invention.

Figure 4 is a first more detailed block diagram of a portion of the software components in Figure 2 for implementing the invention.

Figure 5 is a second more detailed block diagram of a portion of the software components in Figure 2 for implementing the invention.

Figure 6 is a third more detailed block diagram of a portion of the software components in Figure 5 for implementing the invention.

Figure 7 is a fourth more detailed block diagram of a portion of the software components in Figure 5 for implementing the invention.

DESCRIPTION OF SPECIFIC EMBODIMENTS

The drawings show preferred forms of a dynamic market equilibrium management system, process and article of manufacture suitable for implementing the invention.

Introductory Description of the Apparatus

As shown in Figures 2 and 4, merchandising and yield management staff 20 defines a co-op in accordance with the invention using client computer 22 and client software 24, comprised of a set of tools, including but not limited to the market equilibrium manager. The tools 24 communicate with the server processes 26, including but not limited to the database process, to enter the data relevant to each co-op.

The buyer 28 accesses all aspects of the co-op using a client computer 30 running a browser 32 or some other type of client computer program. The client computer program 32 communicates via some means of physical communication layer 34, e.g. the Internet, with a server 36, i.e. the HTTP server, or a server with similar purpose. The HTTP server 36 further communicates, using public or proprietary protocols, with an e-commerce server 38, which contains the principal software for implementing this invention.

The e-commerce server 38 software and related components is comprised of a set of server processes 40, a means 42 of communication between the server processes 40, and a database 44 to hold data significant to the process of taking offers and otherwise interacting with the buyer 28. The capabilities of the e-commerce server software and related components extend far beyond the ability to handle co-ops and implement the market equilibrium manager. The present invention is directed to the capabilities that pertain to co-op market management. The other capabilities of the e-commerce server 38 software and related components are implemented with software modules and routines known in the art and will not be described beyond that necessary to understand the invention.

As shown in Figure 4, co-ops are primarily manifested by a set of database tables 50 that define the essential properties of the co-ops, a set of program subroutines 52 and server processes 54 and 56 defining the logical processing necessary to manage co-ops and their interaction with buyers, and data contained in the database tables 50 defining the values of the essential properties that define each co-op. In particular, the tables 50 contain data that defines the price curves as depicted in Figures 3A-3E.

An example of a price curve set as initially established during the process of setting up a buying co-op is shown in Figure 3A, in this case for a Mitsubishi 36" high definition television set. In this simple model, a constant cost of $875 as shown at 100 and a constant minimum price of $1,000 for which offers will be recorded as shown at 102 are depicted. A price curve 104 shows a declining price for the product with an increasing number of acceptable offers for the product, up to a maximum of 1,000 units, which is the usual case.

In principle, an increasing price for the product could be provided in the case of a product with a limited supply, such as a limited edition collectible. Curve 106 represents a minimum offer threshold which will be used by the market equilibrium manager to modify the price curve 104 as offers are submitted by potential buyers. As long as an offer is above any minimum price 102, it will be recorded, but if it is below the minimum offer threshold 106 at that point in the co-op, it will not be used to modify the price curve 104 or the minimum offer threshold curve 106.

As data is gathered from buyers, by means of their making offers, the co-op is modified using the market equilibrium manager, so as to take into account the market data in the definition of the price curve set. Figure 3B shows such a modified curve set early in the history of the co-op. An additional change shown in Figure 3B from the price curve set shown in Figure 3A is that cost curve 100 and minimum price curve 102, corresponding respectively to the curves 100 and 102 in Figure 3A, are in three segments to reflect typical volume discounts. The market equilibrium manager code is configured to allow such modifications to be made directly on the displayed curves through use of a mouse or other pointing device. The minimum offer threshold curve 106 has also been modified in Figure 3B to give an inflection at 108 by dragging data point 110 with a mouse. As a result, some previous offers that were below the threshold curve 106 and above the minimum price curve 102 and thus ignored for the purpose of modifying the price curve 104 for the co-op, are now used to modify the price curve 104. This has the effect of modifying the price curve 104 as shown. Also shown in Figure 3B is a histogram 112 of the total of 164 committed offers (see the data in block 114) that have been deemed acceptable at this point in the co-op because the maximum price at which they were made was equal to or greater than the current price of $2014 on price curve 104 for that volume of sales. The data at 114 also shows that a total of 216 acceptable offers have been used to modify the price curve 104 and that the co-op will produce a gross margin of $172,036. As merchandising staff modify the curve set shown in Figures 3A-3E to test "what if" scenarios, immediate direct numeric feedback on the effect of those modifications is given in the data of block 114.

Figure 3C shows the curve set in Figure 3B at a later time in the operation of the co-op. Minimum threshold offer curve 106 has again been modified by direct input, i.e., dragging data point 116 to a point just below the price curve 104. This modification means that only offers that are quite close to the current price of $1,754 on the price curve 104 will be used for further modification of the price curve, having the effect of minimizing further price adjustments and potentially lengthening the duration of the co-op to avoid a premature

close. Block 114 now shows a total of 428 committed offers at the current price at this point in the operation of the co-op, with a gross margin of $428,856.

Figure 3D shows the curve set in Figures 3B and 3C at a still later time in the operation of the co-op. Minimum threshold offer curve 106 has once again been modified by direct input, i.e., dragging data point 118 down toward the cost curve 100 and minimum price curve 102. Note that this modification produces a substantial change in the price curve 104 and that the current price for the television set has now dropped to $1,254. Block 114 now shows a total of 570 committed offers with a gross margin of $288,710. Thus, the gross margin at this point has been substantially reduced. Such a modification would not be made in the curve 106 unless it was clear that a substantial reduction in price was needed to sell remaining inventory in the co-op.

However, comparing Figures 3D and 3E shows that, with no further modifications to the minimum threshold offer curve 106, all 1,000 of the television sets are sold at a price of $1,089, giving a gross margin of $513,000. The ability to follow the progress of a co-op with data feedback from modifications to the displayed curve set itself shown in the block 114 provides a powerful management system for buying co-ops.

Co-op Selection

In order to select a co-op for participation, the buyer is presented with the following essential co-op information: current price and closing time. The buyer may also be shown the next price level (as defined by the price curve visibility window and the price curve), sufficient for the buyer to determine the urgency of an offer.

Offers below Current Price

Once a buyer has made up his mind to join a co-op, the decision must be made to make an offer at a price which encompasses the current price, guaranteeing availability once critical mass is achieved, or to make an offer contingent on a lower maximum price, which may not result in a successful purchase regardless of whether critical mass is achieved.

Given the decision to make an offer, the steps are as follows:

1. The buyer enters an offer which specifies the maximum price at which he is willing to purchase the product, his credit card number and any other pertinent information.

2. The system acknowledges his offer.

3. The system authorizes his credit card for the maximum price specified in his offer, such that his offer is guaranteed to be valid.

4. If the offer is at or above the minimum threshold curve, the current price may be affected as defined by the price curve, and any new price may be displayed.

5. If the offer is below the minimum threshold curve, the offer is still recorded, but it is disregarded from the pool of offers allowed to impact current price. The reasonable range of offer prices defining the minimum threshold curve may be derived from the price curve itself, and/or external merchandising factors.

6. Should the current price drop to or below the price level at which the offer was made, such offer is included within the pool of offers to be accepted at close of the co-op and will be processed as such at close. Inventory is allocated to fulfill the order immediately after the co-op closes.

Offers at Current Price

Given the decision to make an offer specifying a maximum price at the co-op current price, the steps are as follows:

1. The buyer makes a non-cancelable offer to purchase the featured product at a range which includes the current price as the maximum acceptable price.

2. The system acknowledges the offer, and at close of the co-op, if the critical mass has been met, the system indicates to the buyer that his offer is accepted.

3. Inventory is allocated to fulfill the order.

Co-op Close

A co-op will result in final sales only if the required critical mass is met. Assuming critical mass is achieved, the steps taken upon closing of a co-op are as follows:

1. The final co-op price is fixed and applied to all offers specifying maximum prices at or above the final co-op price.

2. All offers meeting the criteria above are accepted and converted to final sales by the e-commerce server, which are then communicated to product supplier and/or a fulfillment representative, which ships the products and charges the buyer's account.

3. All buyers that made successful offers are notified of the success thereof, and notified of the final price.

4. The buyers that made unsuccessful offers are likewise notified of the situation.

Detailed Description of the Apparatus

The apparatus and software for practicing the preferred implementation of the invention is shown in Figures 1, 2 and 4.

Servers

The server systems are comprised of the following hardware and software components:

* A set of computers 36, 38 and 140, having the standard definition of a computer system.

* A set of server programs, configured to execute on said set of computers. The server programs consist of:

1. A set of database servers 56 holding the database tables and their data.

2. A set of e-commerce servers 54 that hold the executable commerce-related logic, interacting with the client via:

3. A set of HTTP servers 36, or other such servers with similar purpose, namely being dedicated to being the communication link between the client 32 and the e-commerce servers 54.

Database Tables

The apparatus is further comprised of a set of database tables 50, including, but not limited to:

* MC_COOP -- defining the co-op in detail, including, but not limited to, these fields:
  - PRODUCT_ID The unique ID for the product being offered
  - MC_COOP_START_DATETIME The date/time that the co-op is scheduled to open
  - MC_COOP_FINISH_DATETIME The date/time that the co-op is scheduled to close (might close early if sell all products)
  - MC_COOP_MINIMUM_QUANTITY The minimum quantity that we must sell
  - MC_COOP_MAXIMUM_QUANTITY The maximum quantity that we can sell
  - MC_COOP_ORDER_QUANTITY_LIMIT The limit on the # of items that can be ordered by a single customer
  - MC_COOP_BID_REJECT_THRESHOLD Price limit: below this price an offer is not considered "reasonable"
  - MC_COOP_PRICING_SCHEME Defines whether price curve is line segments or step-wise
  - MC_COOP_COST_SCHEME Defines whether cost curve is line segment or step-wise
  - MC_COOP_IGNORE_SCHEME Defines whether ignore curve is line segments or step-wise
  - MC_COOP_STATUS Overall status (not yet started, etc.)
  - MC_COOP_WINDOW_PRICE Height of price window (used to encourage customers to notify their friends)

- MC_COOP_CURRENT_PRICE The current price for the co-op item (by definition, some point on the price curve)

* MC_OFFER -- defining the offers that have been made for a co-op, including, but not limited to, these fields:

- OID A unique identifier for the offer
- MC_COOP_OID The unique identifier for the co-op
- MC_OFFER_USER_ID The unique identifier for the user who submitted the offer
- MC_OFFER_DATETIME The date/time the offer was submitted (early offers get priority)
- MC_OFFER_PRICE The price that was offered
- MC_OFFER_QUANTITY The quantity that was requested
- MC_OFFER_SHOWN_PRICE The current c-op price at the time the offer was made (to calculate savings)
- MC_OFFER_MERCATA_BUCKS_EARNED Part of the loyalty management program
- MC_OFFER_SHIPPING_ALIAS Identifies shipping destination (needed if offer becomes a real order)
- MC_OFFER_PAYMENT_ALIAS Identifies payment method (needed if offer becomes a real order)

A set of price curve tables, all with the same fields.

* MC_COOP_PRICE_CURVE Defines the co-90 price curve (or steps)
* MC_COOP_IGNORE_CURVE Defines the co-op ignore curve (a "throttle" on the speed of the co-op)
* MC_COOP_COST_CURVE Defining the points of the price curve for the co-op, including, but not limited to, these fields:

1. Coop_ID: The co-op identifier that this price curve point is relevant for.
2. Threshold_Quantity: The quantity coordinate for the price curve point.
3. Threshold_Price: The price coordinate for the price curve point.

- MC_COOP_WISHLIST -- defining the individual suggestions for new co-ops that have been made by various buyers.

Program Logic

The program logic of this invention consists of several components, shown in Figure 2, all residing within the e-commerce servers 54. They include, but are not limited to:

1. Co-op display components 150, having the purpose of presenting information to the users via the HTTP servers and client browser software, and further interpreting the inputs of the users (merchandising staff as well as buyers) and translating those inputs into new presentation of information and/or manipulations of the data stored in the system. The display components that are primarily relevant to this invention are:

MC Product List	Display a list of products, showing co-op information
MC Product Details	Display a single product, showing co-op information
Co-op offer & checkout	Accept an offer from the user
E-mail a friend	Encourage participants to add to the co-op by sending e-mail to the friends

The product list and product details modules show the co-op product description, price (with an animated image in the background to show that the price may fall even further), product features, etc. The co-op offer & checkout accepts an offer from a customer regardless of whether the offer is at the current price or at some lower price. We take the customer's name, e-mail address, shipping destination, credit card information, and the amount of the offer. We also show some legal text which informs the customer that this offer is binding and will be converted to a real order if the co-op price meets their offer amount, etc.

2. Data access components 26, having the purpose of translating database information into data that can be used to display information to buyers. These components are also responsible for updating information in the database based on interactions with the users via the various clients 24 and 32, HTTP servers 36, and co-op display components 150.

The data access components 26 that are primarily relevant to this invention include, but are not limited to:

* MCI_Co-op, responsible for providing information regarding, and management of, individual co-ops. Management actions include changing the current price, adding offers at or below the current price, modifying the price curve and the price curve visibility window.

*MCI_Co-opManager, responsible for information regarding, and management of, sets of co-ops. This management includes finding co-ops with certain characteristics, creating new co-ops, and deleting co-ops that already exist.

Details of the software for displaying and skillfully managing the set of price curves shown in Figures 3A-3E are shown in Figure 5. The software in the merchandising staff client computer 22 includes a graphical manipulation module 160, which is coupled to interact with a constraints module 162, which prevents certain graphical manipulations of the price curve set, such as offers above the current price or below the cost of the product in the co-op. The graphical manipulation module 160 is coupled to a data formatting module 164, which formats data represented by a modification to the set of price curves into a form suitable for storage in the database 44 (see also Figure 2). As shown, the database is desirably, but not necessarily, stored in the common object request broker architecture (CORBA) form. The data formatting module 164 is coupled through a database interface module 166 to the database 44 to pass the formatted data to the database 44. In order to provide feedback on the effect of a direct data manipulation of the price curve set, suitable conventional software (not shown) recalculates variables dependent on the data modified by direct curve manipulation and feeds the results of those calculations to the graphical manipulation module for display on the curve set and in the data block 114 (Figures 3A-3E).

For comparative purposes, if a spreadsheet program 168 is used for data manipulation to test "what if" scenarios, changes in a data cell of the spreadsheet and resulting recalcuations of dependent cells are supplied by the spreadsheet program to the database interface module 166 for storage in the database 44. Any visual display of the data modifications and resulting recalculations would then be made using a graphing component of the spreadsheet. Observing the effects of making such changes using the spreadsheet program would be much less direct than observing the changes made by direct data manipulation with the graphical manipulation module 160.

Further details of the graphical manipulation module 160 are shown in Figure 6. A shape function 170 is coupled to a current price function 172, a price window function 174, a cost function 176, a price function 178 and an offer histogram function 180. The cost function 176 is coupled to a margin function 182, and the price function 178 is coupled to a minimum offer function 184. These functions interact to produce the set of price curves shown in Figures 3A-3E.

Details of the database interface module 166 (Figure 5) are shown in Figure 7. The DB interface 166 includes a system object 184, which interacts with the database 44 in host server 140 (Figure 1). A co-op object 186 manipulates co-ops and attributes of co-ops and interacts with the database 44 through the system object 184. A co-op manager object 188

finds and creates co-ops and also interacts with the database 44 through the system object 184.

All publications and patent applications mentioned in this specification are herein incorporated by reference to the same extent as if each individual publication or patent application was specifically and individually indicated to be incorporated by reference.

The invention now being fully described, it will be apparent to one of ordinary skill in the art that many changes and modifications can be made thereto without departing from the spirit or scope of the appended claims.

WHAT IS CLAIMED IS:

1. A system for defining a price curve and approaching market equilibrium in an on-line buying co-op for a product, which comprises:

(a) an e-commerce server data processing system, said e-commerce server data processing system including e-commerce server software executable on said e-commerce server data processing system and configured to define an on-line buying co-op for a product;

(b) a storage device coupled to said e-commerce data processing system and having stored therein a database including at least price and quantity data for the product; and

(c) a merchandising staff client data processing system coupled to said storage device, said merchandising staff client data processing system including client software executable on said merchandising staff client data processing system and configured to receive merchandising staff inputs for defining the buying co-op for the product, said client software including a market equilibrium manager to establish a price curve for the product in the buying co-op by utilizing the price and quantity data for the product in said database.

2. The system for defining a price curve and approaching market equilibrium in an on-line buying co-op for a product of claim 1 in which said client software is further configured by including data entry tools to establish a start time and an end time for the on-line buying co-op, at least minimum quantities of the product offered and a starting price for the product.

3. The system for defining a price curve and approaching market equilibrium in an on-line buying co-op for a product of claim 2 in which said client software is further configured by including a display component configured to manipulate and display data associated with the on-line buying co-op on said merchandising staff client data processing system.

4. The system for defining a price curve and approaching market equilibrium in an on-line buying co-op for a product of claim 3 in which said e-commerce server software is further configured to store price and quantity data of offer inputs from buyers in said database and said market equilibrium manager is further configured to obtain updated price data and offer data from said database, said display component being configured to display

the price curve, an offer histogram, and other information suggesting the price point at which market equilibrium is achieved.

5. The system for defining a price curve and approaching market equilibrium in an on-line buying co-op for a product of claim 4 in which said display component is further configured to allow merchandising staff inputs to modify the price curve by direct manipulation of the price curve display.

6. The system for defining a price curve and approaching market equilibrium in an on-line buying co-op for a product of claim 5 in which said client software is configured to translate the modified price curve to data with a data format for storage in said database.

7. The system for defining a price curve and approaching market equilibrium in an on-line buying co-op for a product of claim 6 in which said display component is further configured to display a yield amount from sale of the product based on data from said database.

8. The system for defining a price curve and approaching market equilibrium in an on-line buying co-op for a product of claim 7 in which said display component is further configured to modify the displayed yield amount from sale of the product as the price curve is modified.

9. A process for defining a price curve and approaching market equilibrium in an on-line buying co-op for a product, which comprises:

(a) defining an on-line buying co-op for a product;

(b) storing in a storage device a database including at least price and quantity data for the product;

(c) accepting inputs from buyers in the form of offers for the product;

(d) using the buyer inputs to modify the database;

(e) receiving merchandising staff inputs utilizing a market equilibrium manager to establish a price curve for the product in the on-line buying co-op by utilizing the price and quantity data for the product in the database.

10. The process for defining a price curve and approaching market equilibrium in an on-line buyers' cooperative for a product of claim 9 in which the on-line buying co-op is defined by using data entry tools to establish a start time and an end time for the buying co-op, at least minimum quantities of the product offered and a starting price for the product.

11. The process for defining a price curve and approaching market equilibrium in an on-line buying co-op for a product of claim 10 further comprising the step of:

(f) managing, adjusting and displaying data associated with the on-line buying co-op.

12. The process for defining a price curve and approaching market equilibrium in an on-line buying co-op for a product of claim 11 further comprising the step of:

(g) obtaining updated price data and offer data from the database and displaying the price curve and an offer histogram.

13. The process for defining a price curve and approaching market equilibrium in an on-line buying co-op for a product of claim 12 further comprising the step of:

(h) receiving merchandising staff inputs to modify the price curve display by direct manipulation of the price curve display.

14. The process for defining a price curve and approaching market equilibrium in an on-line buying co-op for a product of claim 13 further comprising the step of :

(i) translating the modified price curve to data with a data format for storage in the database.

15. The process for defining a price curve and approaching market equilibrium in an on-line buying co-op for a product of claim 14 additionally comprising the step of:

(j) displaying a yield amount from sale of the product based on data from the database.

16. The process for defining a price curve and approaching market equilibrium in an on-line buying co-op for a product of claim 15 additionally comprising the step of:

(k) modifying the displayed yield amount from sale of the product as the price curve is modified.

17. An article of manufacture, which comprises a computer readable medium having stored therein a computer program for defining a price curve and approaching market equilibrium in an on-line buying co-op for a product, the computer program comprising:

(a) a first code segment for defining a buying co-op for a product;

(b) a second code segment for storing in a storage device a database including at least price and quantity data for the product;

(c) a third code segment for accepting inputs from buyers in the form of offers for the product;

(d) a fourth code segment for using the buyer inputs to modify the database; and

(e) a fifth code segment for receiving merchandising staff inputs utilizing a market equilibrium manager to establish a price curve and approach market equilibrium for the product in the on-line buying co-op by utilizing the price and quantity data for the product in the database.

18. The article of manufacture of claim 17 in which the first code segment includes code for receiving merchandising staff inputs for defining the buying co-op for the product.

19. The article of manufacture of claim 18 in which the first code segment is configured to define the buying co-op for the product by establishing a start time and an end time for the buying co-op, at least minimum quantities of the product offered and a starting price for the product.

20. The article of manufacture of claim 19 in which the computer program additionally comprises:

(f) a sixth code segment for manipulating and displaying data associated with the on-line buying co-op.

21. The article of manufacture of claim 20 in which the computer program additionally comprises:

(g) a seventh code segment for obtaining updated price data and offer data from the database and displaying the price curve and an offer histogram.

22. The article of manufacture of claim 21 in which the computer program further comprises:

(h) an eighth code segment for receiving merchandising staff inputs to modify the price curve display by direct manipulation of the price curve display.

23. The article of manufacture of claim 22 in which the computer program further comprises:

(i) a ninth code segment for translating the modified price curve to data with a data format for storage in the database.

24. The article of manufacture of claim 23 in which the computer program additionally comprises:

(j) a tenth code segment for displaying a yield amount from sale of the product based on data from the database.

25. The article of manufacture of claim 24 in which the computer program additionally comprises:

(k) an eleventh code segment for modifying the displayed yield amount from sale of the product as the price curve is modified.

26. A system for providing a graphical user interface for displaying data graphically, which comprises:

(a) a display;

(b) a data processing system coupled to said display;

(c) a storage device coupled to said data processing system and containing a database;

(d) first software in the data processing system configured to control said data processing system for providing a graphical display of data from said database;

(e) second software in the data processing system configured to receive user inputs for directly manipulating the graphical display of the data;

(f) third software in the data processing system configured to supply modified data based on the manipulation of the graphical display of the data to said database;

(g) fourth software coupled to the database and configured to recalculate dependent variables of the modified data; and

(h) fifth software in the data processing system configured to display feedback dependent variable data on said display with the graphical display of data from said database.

27. The system for providing a graphical user interface of claim 26 in which the second software in the data processing system is configured to receive the user inputs for directly manipulating the graphical display of the data by allowing the user to move at least one data point in the graphical display.

28. The system for providing a graphical user interface of claim 27 in which the fifth software is configured to display feedback dependent variable data on said display by showing at least one changed numerical value with the graphical display in response to moving at least one data point in the graphical display.

29. A process for providing a graphical user interface displaying data graphically with a data processing system, which comprises:

(a) storing data in a database;

(b) providing a graphical display of data from the database on a display device of the data processing system;

(c) receiving a user input to the data processing system for directly manipulating the graphical display of the data;

(d) supplying modified data based on the manipulation of the graphical display of the data to the database;

(e) recalculating dependent variables of the modified data; and

(f) displaying feedback dependent variable data on the display device with the graphical display of data from the database.

30. The process for providing a graphical user interface of claim 29 in which the user input for directly manipulating the graphical display of the data is received by allowing the user to move at least one data point in the graphical display.

31. The process for providing a graphical user interface of claim 30 in which the feedback dependent variable data is displayed on said display by showing at least one changed numerical value with the graphical display in response to the user moving at least one data point in the graphical display.

32. An article of manufacture, which comprises a computer readable medium having stored therein a computer program for providing a graphical user interface displaying data graphically with a data processing system comprising:

(a) a first code segment for storing data in a database;

(b) a second code segment for providing a graphical display of data from the database on a display device of the data processing system;

(c) a third code segment for receiving user inputs to the data processing system for directly manipulating the graphical display of the data;

(d) a fourth code segment for supplying modified data based on the manipulation of the graphical display of the data to the database;

(e) a fifth code segment for receiving recalculated dependent variables of the modified data; and

(f) a sixth code segment for displaying feedback dependent variable data on the display device with the graphical display of data from the database.

33. The article of manufacture of claim 32 in which said third code segment is configured to receive the user input for directly manipulating the graphical display of the data by allowing the user to move at least one data point in the graphical display.

34. The article of manufacture of claim 33 in which said sixth code segment is configured to display the feedback dependent variable data on said display by showing at least one changed numerical value with the graphical display in response to the user moving at least one data point in the graphical display.

DYNAMIC MARKET EQUILIBRIUM MANAGEMENT SYSTEM, PROCESS AND ARTICLE OF MANUFACTURE

ABSTRACT OF THE DISCLOSURE

A dynamic market equilibrium management system is especially adapted for the sale of goods and services through an online buying group (referred to herein as a "co-op') formed for the specific purpose of purchasing a particular product at (102) by defining a start time, end time, critical mass, any minimum number of units offered, any maximum number of units offered, starting price and product cost curve. As data is gathered from buyers, by means of their making binding purchase offers, the co-op is modified at (108) using the market equilibrium manager, so as to take into account market forces such as supply and demand for the item to be sold and their interrelationship with the purchase price for such item. When used with the online buying group, the dynamic market equilibrium management system permits dynamic, real time yield management decisions based on true market data. A graphical user interface receives user inputs for directly manipulating graphical display of data from a database on a display device and displays feedback dependent variable data on the display device, such as in the form of a changed numerical value in response to the user moving at least one data point in the graphical display.

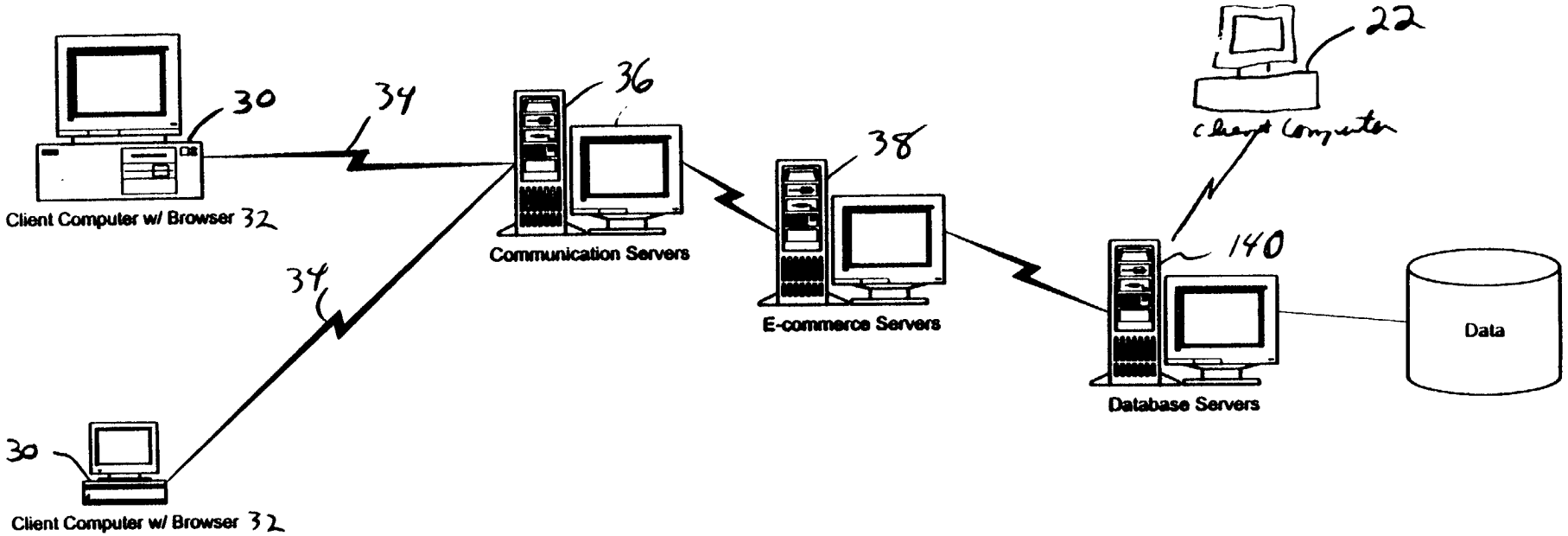


FIG. 1

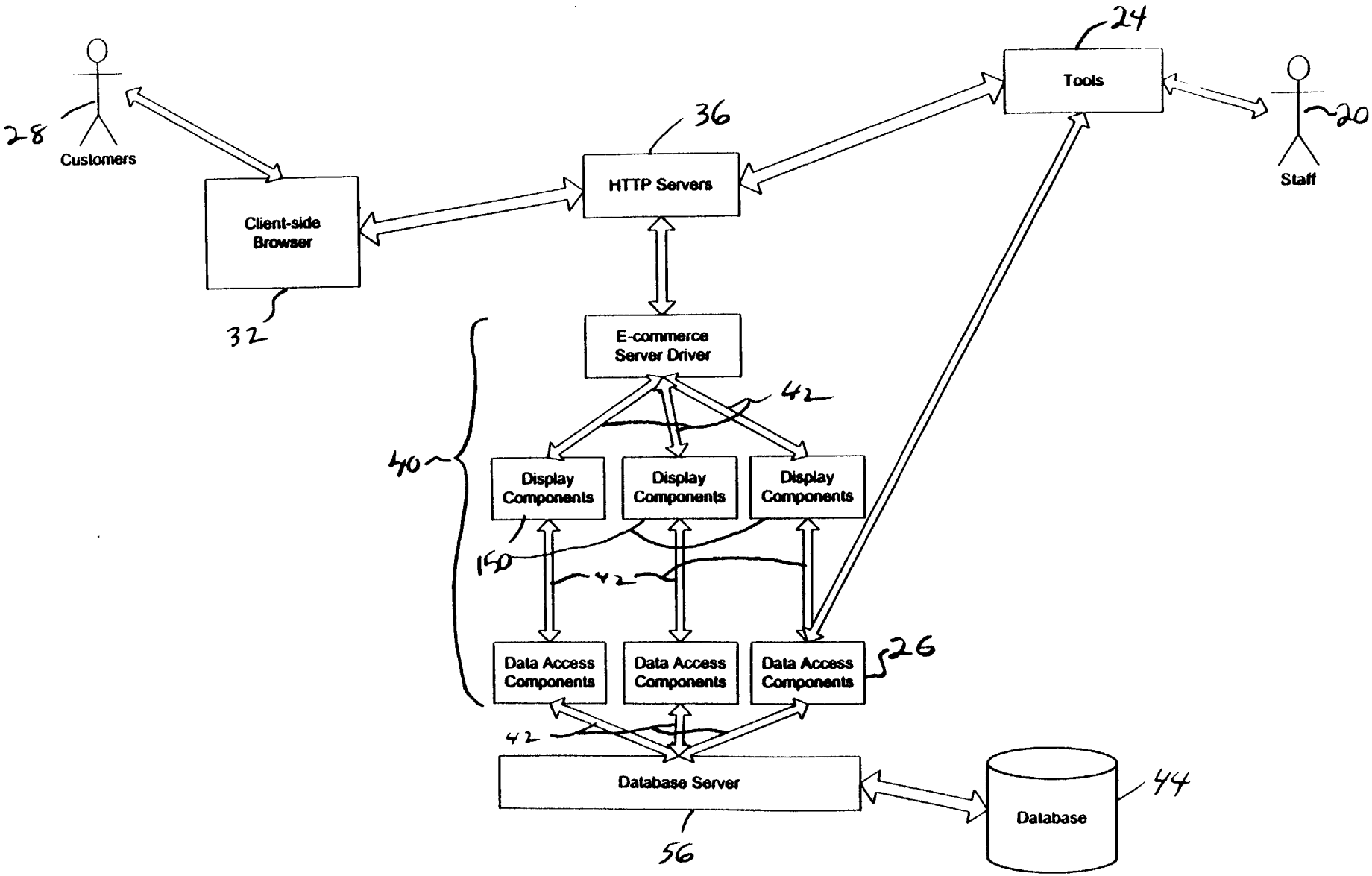


FIG. 2

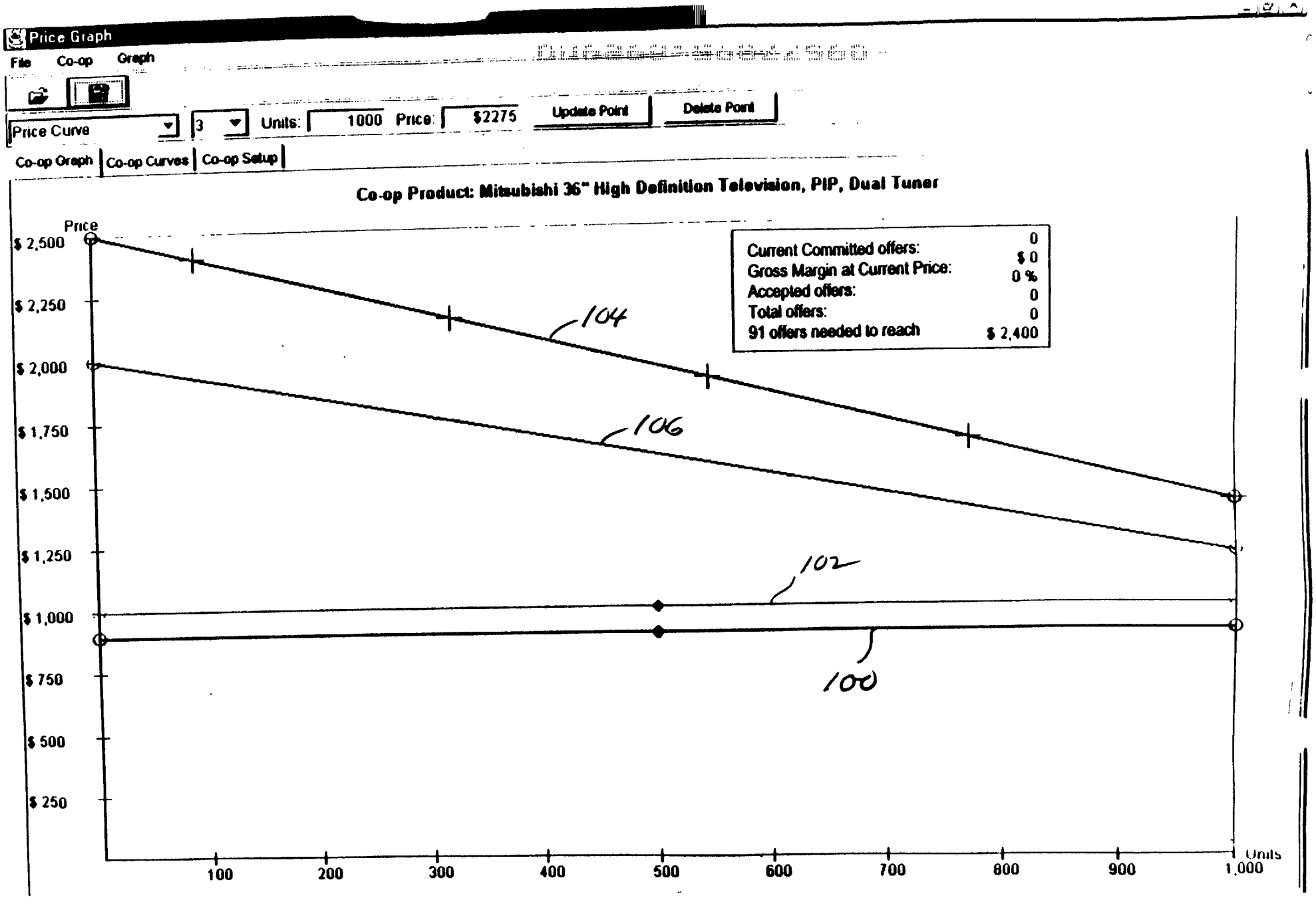

Price Graph
File
Co-op
Graph
Price Curve
3
Units: 1000
Price: $2275
Update Point
Delete Point
Co-op Graph
Co-op Curves
Co-op Setup
Co-op Product: Mitsubishi 36" High Definition Television, PIP, Dual Tuner
Price
$ 2,500
$ 2,250
$ 2,000
$ 1,750
$ 1,500
$ 1,250
$ 1,000
$ 750
$ 500
$ 250
Current Committed offers: 0
Gross Margin at Current Price: $ 0
Accepted offers: 0 %
Total offers: 0
91 offers needed to reach $ 2,400
104
106
102
100
100
200
300
400
500
600
700
800
900
1,000
Units

FIG. 3A

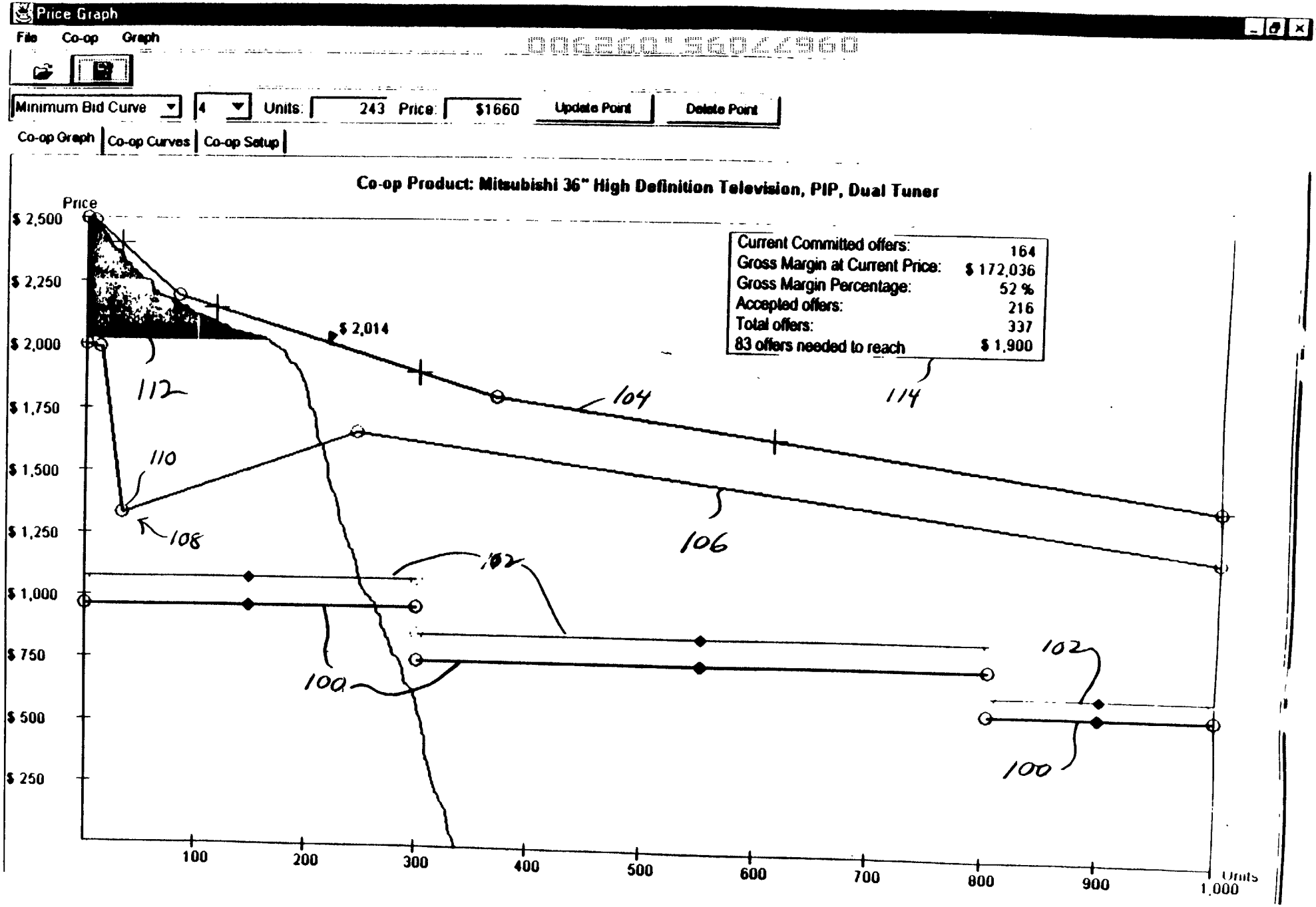

Price Graph
File
Co-op
Graph
Minimum Bid Curve
4
Units: 243
Price: $1660
Update Point
Delete Point
Co-op Graph
Co-op Curves
Co-op Setup
Co-op Product: Mitsubishi 36" High Definition Television, PIP, Dual Tuner
Price
$ 2,500
$ 2,250
$ 2,000
$ 1,750
$ 1,500
$ 1,250
$ 1,000
$ 750
$ 500
$ 250
$ 2,014
Current Committed offers: 164
Gross Margin at Current Price: $ 172,036
Gross Margin Percentage: 52 %
Accepted offers: 216
Total offers: 337
83 offers needed to reach $ 1,900
112
104
114
110
108
106
102
100
102
100
100
200
300
400
500
600
700
800
900
1,000
Units

FIG. 3B

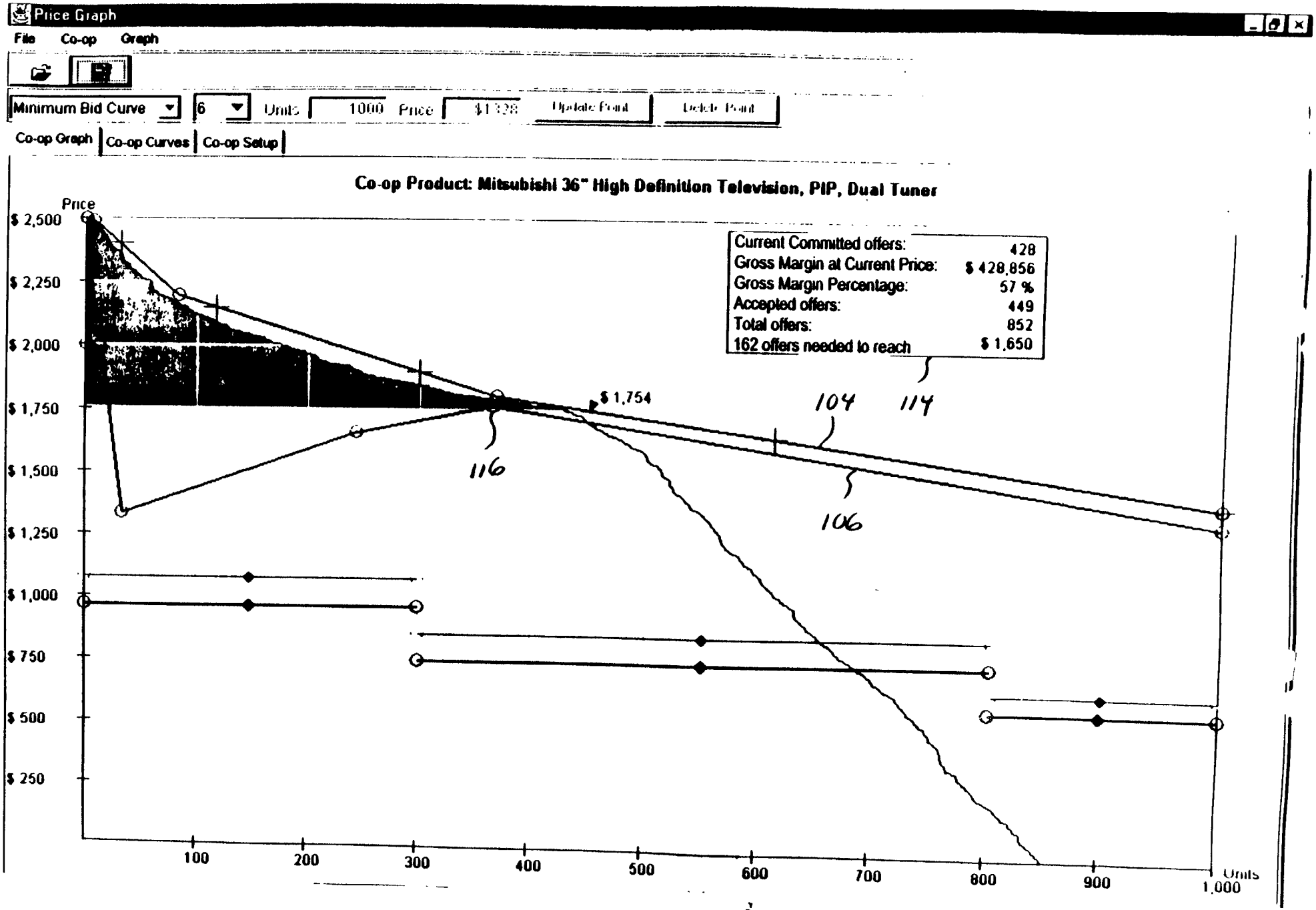

Price Graph
File
Co-op
Graph
Minimum Bid Curve
6
Units
1000
Price
Update Point
Delete Point
Co-op Graph
Co-op Curves
Co-op Setup
Co-op Product: Mitsubishi 36" High Definition Television, PIP, Dual Tuner
Price
$ 2,500
$ 2,250
$ 2,000
$ 1,750
$ 1,500
$ 1,250
$ 1,000
$ 750
$ 500
$ 250
Current Committed offers: 428
Gross Margin at Current Price: $ 428,856
Gross Margin Percentage: 57 %
Accepted offers: 449
Total offers: 852
162 offers needed to reach $ 1,650
$ 1,754
116
104
114
106
100
200
300
400
500
600
700
800
900
1,000
Units

FIG. 3C

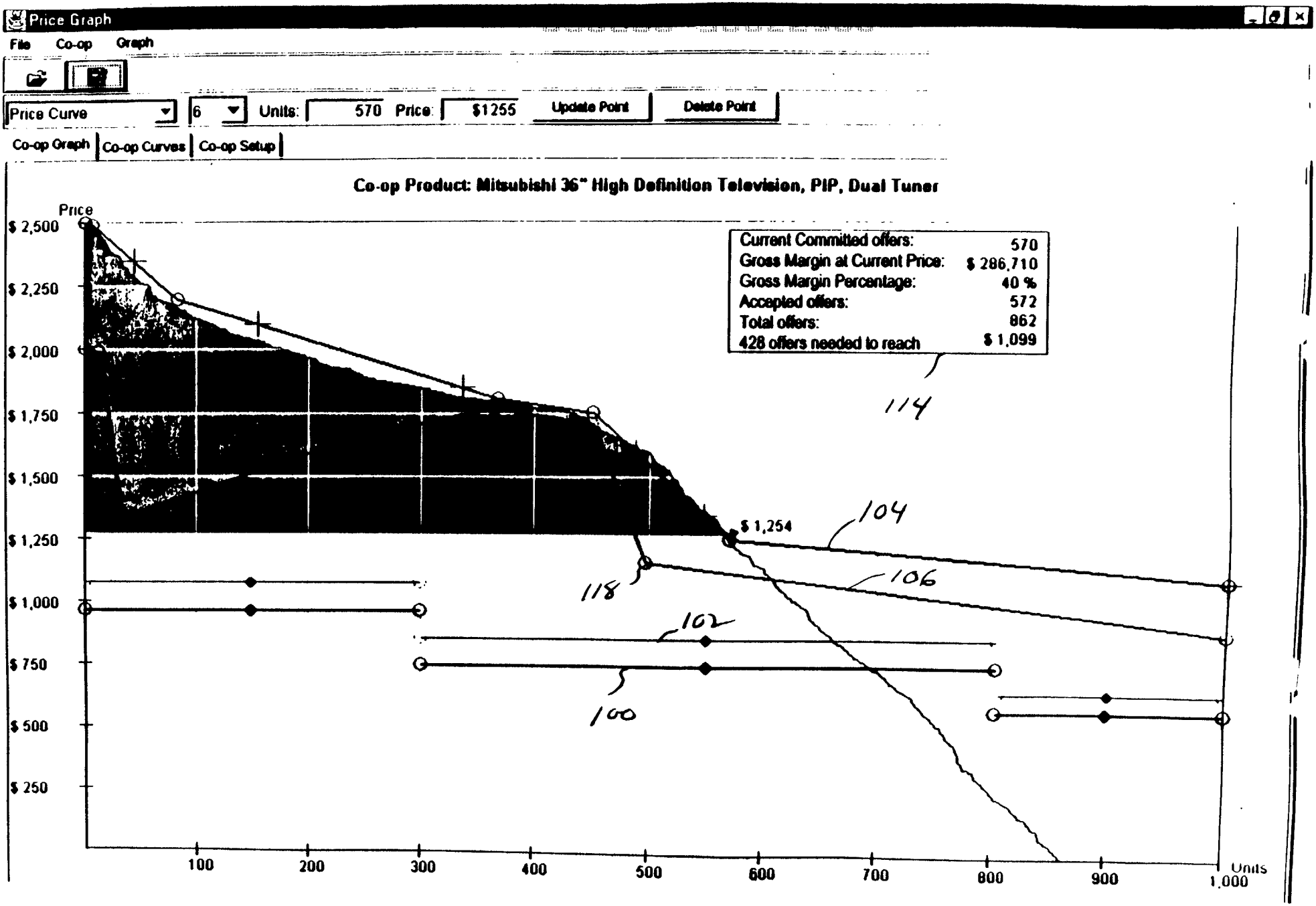

Price Graph
File
Co-op
Graph
Price Curve
6
Units: 570
Price: $1255
Update Point
Delete Point
Co-op Graph
Co-op Curves
Co-op Setup
Co-op Product: Mitsubishi 36" High Definition Television, PIP, Dual Tuner
Price
$ 2,500
$ 2,250
$ 2,000
$ 1,750
$ 1,500
$ 1,250
$ 1,000
$ 750
$ 500
$ 250
Current Committed offers: 570
Gross Margin at Current Price: $ 286,710
Gross Margin Percentage: 40 %
Accepted offers: 572
Total offers: 862
428 offers needed to reach $ 1,099
114
$ 1,254
104
106
118
102
100
100
200
300
400
500
600
700
800
900
1,000
Units

FIG. 3D

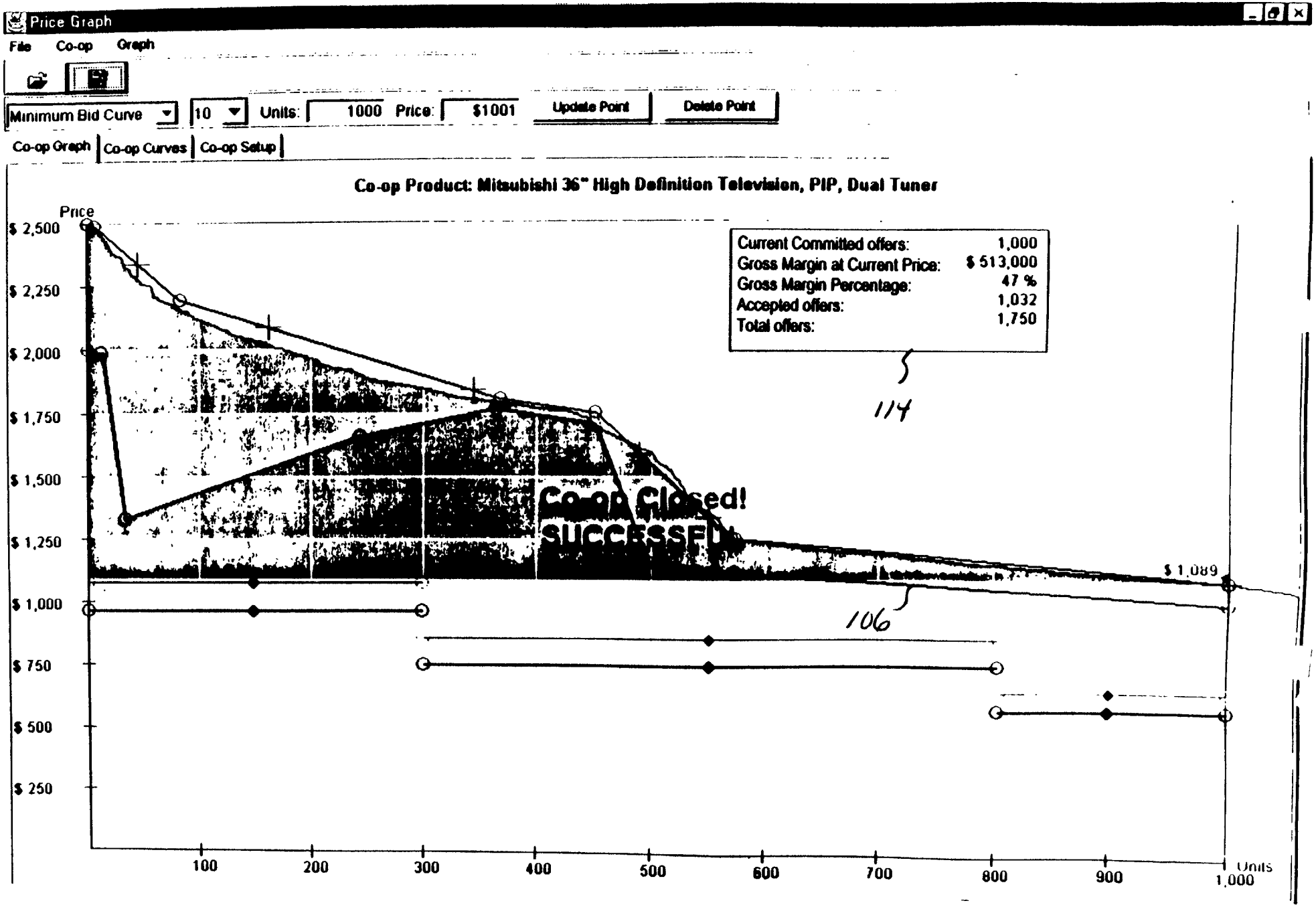

Price Graph
File
Co-op
Graph
Minimum Bid Curve
10
Units: 1000
Price: $1001
Update Point
Delete Point
Co-op Graph
Co-op Curves
Co-op Setup
Co-op Product: Mitsubishi 36" High Definition Television, PIP, Dual Tuner
Price
$ 2,500
$ 2,250
$ 2,000
$ 1,750
$ 1,500
$ 1,250
$ 1,000
$ 750
$ 500
$ 250
Current Committed offers: 1,000
Gross Margin at Current Price: $ 513,000
Gross Margin Percentage: 47 %
Accepted offers: 1,032
Total offers: 1,750
114
Co-op Closed!
SUCCESSFUL
$ 1,089
106
100
200
300
400
500
600
700
800
900
1,000
Units

FIG. 3E

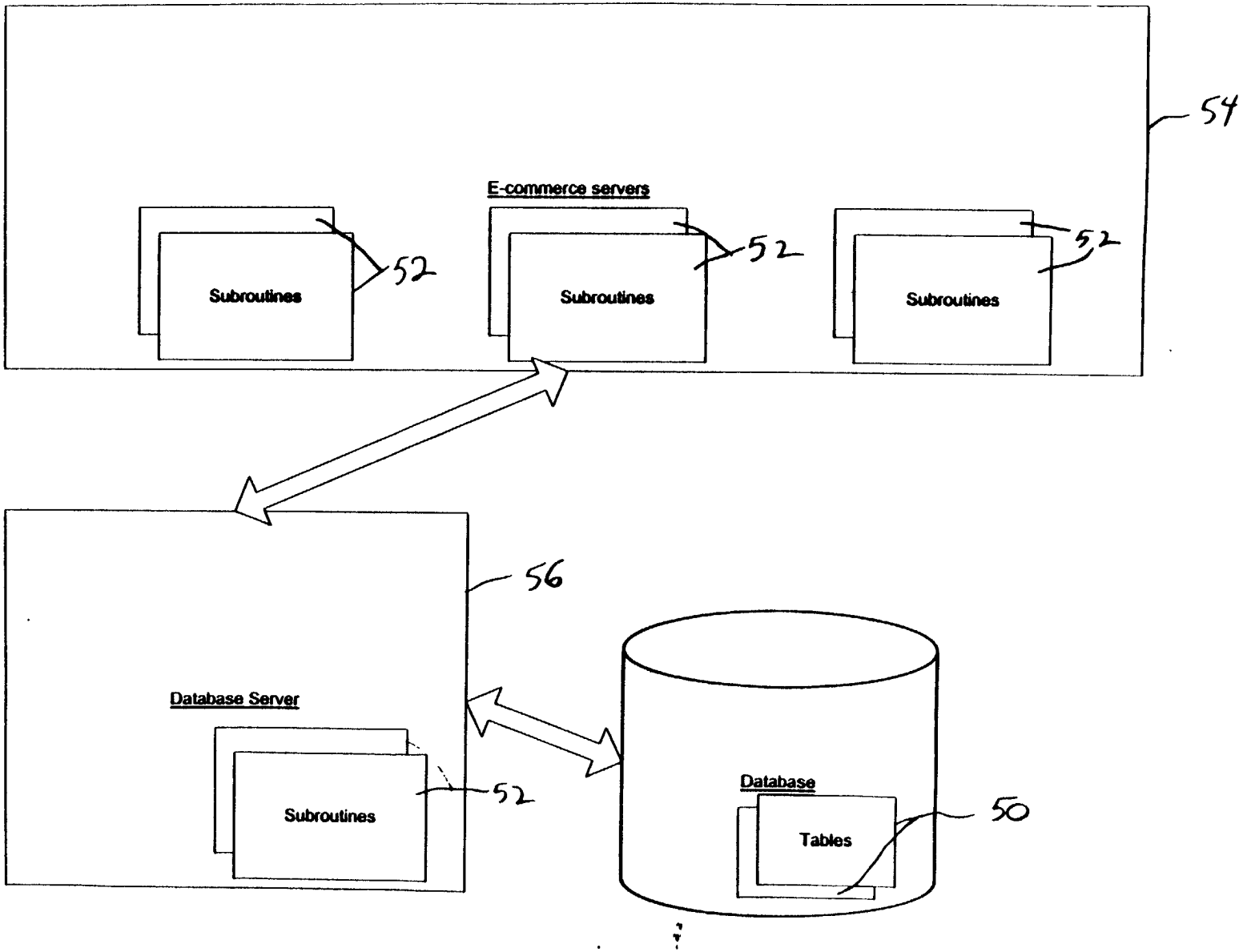


FIG. 4

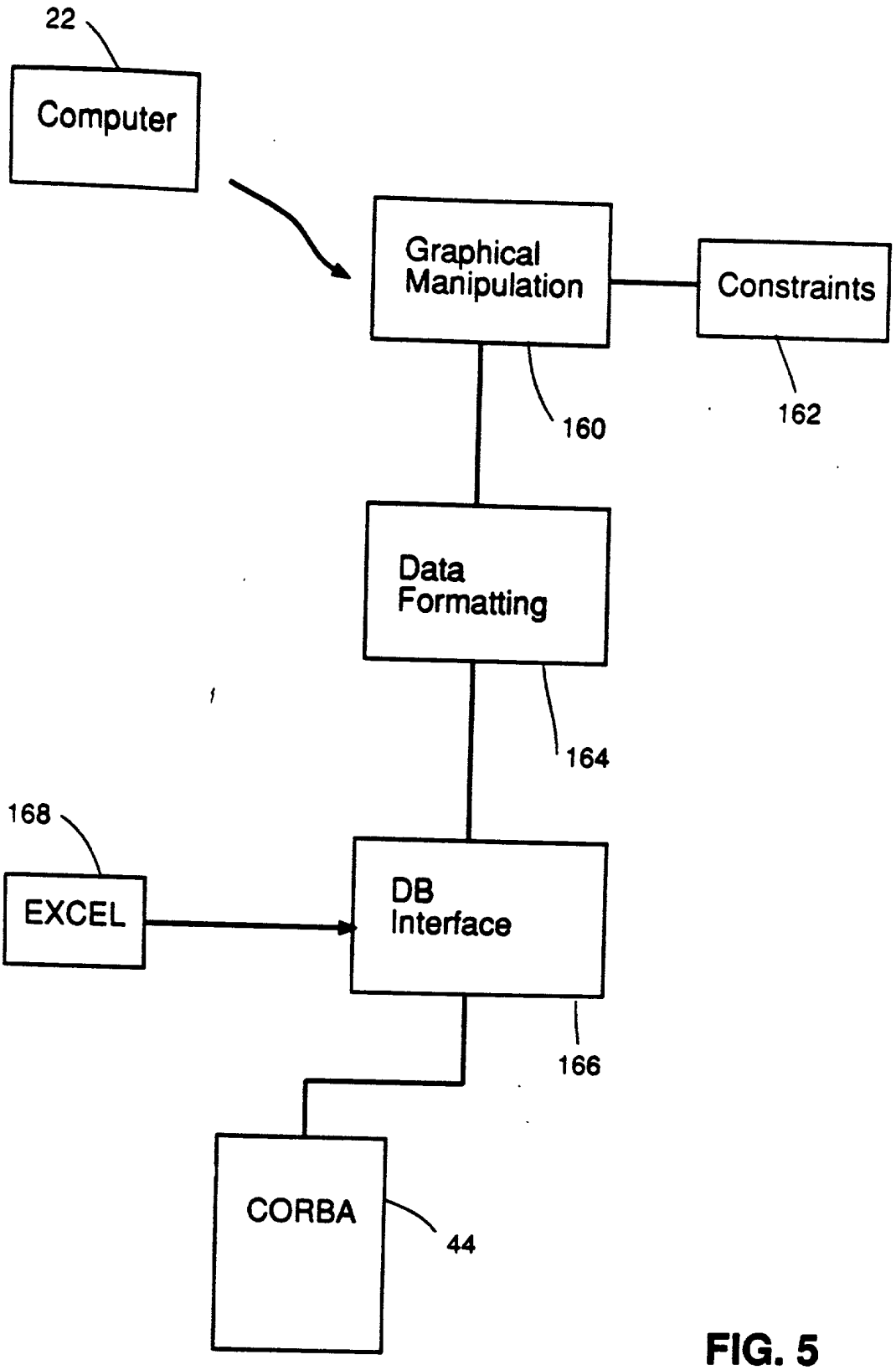

22
Computer
Graphical Manipulation
Constraints
160
162
Data Formatting
164
168
EXCEL
DB Interface
166
CORBA
44

FIG. 5

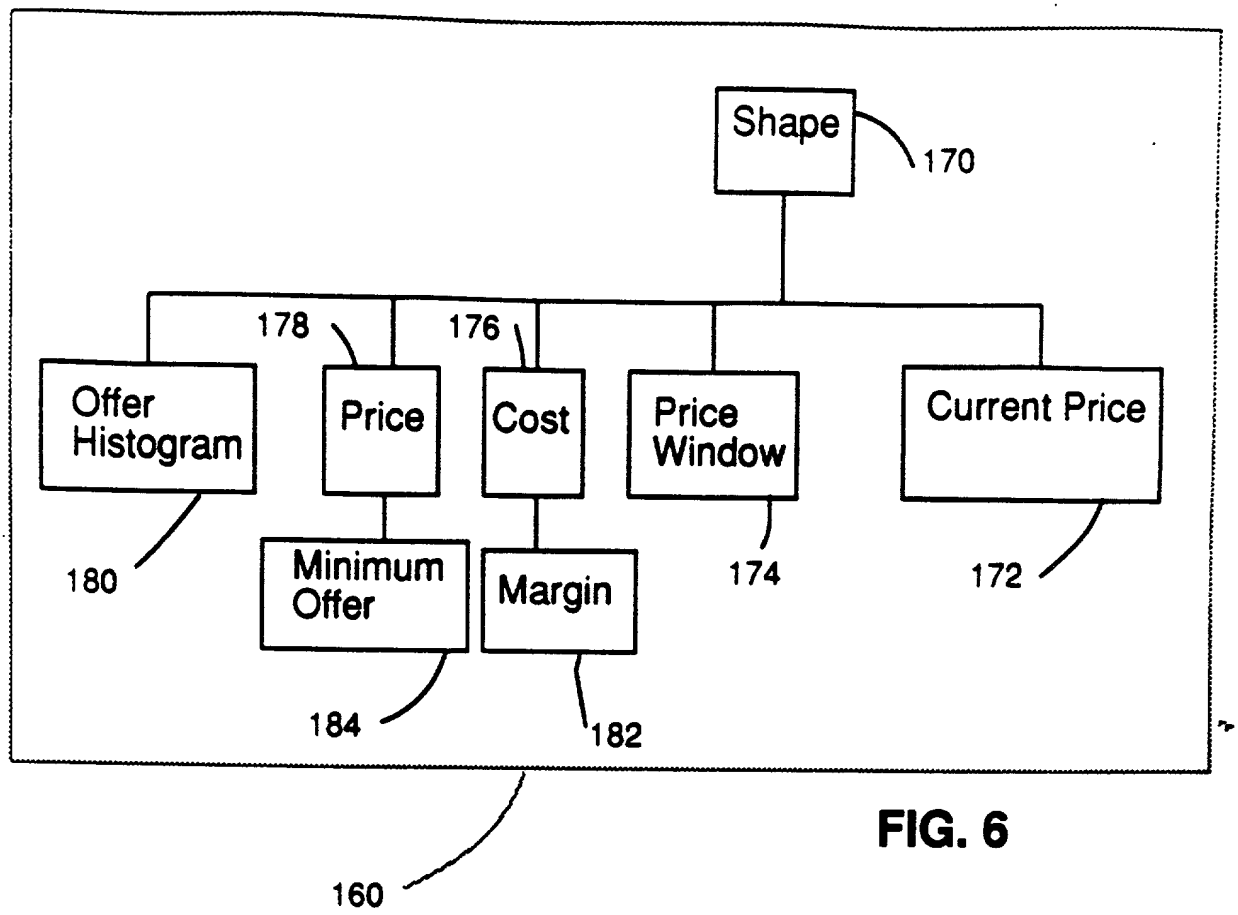

Shape
170
178
176
Offer Histogram
Price
Cost
Price Window
Current Price
180
Minimum Offer
Margin
174
172
184
182
160

FIG. 6

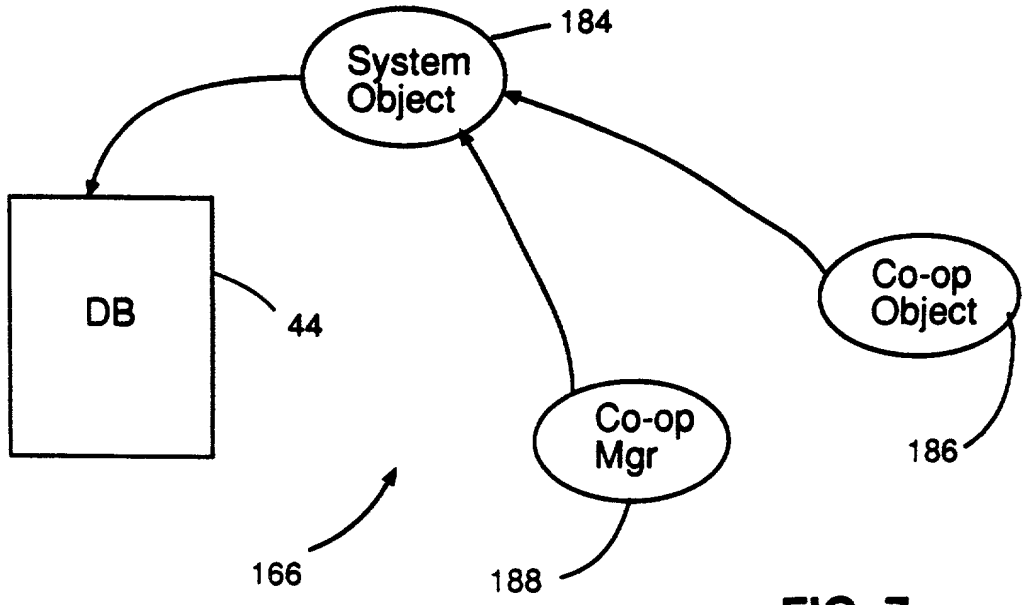

184
System Object
DB
44
Co-op Object
Co-op Mgr
186
166
188

FIG. 7

DECLARATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

DYNAMIC MARKET EQUILIBRIUM MANAGEMENT SYSTEM, PROCESS AND ARTICLE OF MANUFACTURE

the specification of which:

[] is attached hereto.

[X] was filed on March 31, 1999, and identified as Attorney Docket No. MCTA-002/00US.

[] was filed on March 31, 1999, as Application Serial No. _____.

and

[] the amendment(s) of which were filed on _____.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under title 35, United States Code, Section 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s) (Country) (Number) (Day/Month/Year Filed) Priority Claimed (Yes/No)

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below.

(Application Number)	(Filing Date)
(Application Number)	(Filing Date)

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Appl. Ser. No.	Filing Date	Status (Pat'd./Pend./Aband.)

I direct that correspondence concerning this application be directed to

COOLEY GODWARD LLP
Attention: Patent Group
Five Palo Alto Square
3000 El Camino Real
Palo Alto, California 94306-2155
Telephone (650) 843-5000
Facsimile (650) 857-0663

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole or First inventor: HALBERT, Richard V.

Inventor's signature Richard V. Halbert Date 4/13/99

Residence: 2509 Sahalee Dr. E
Redmond, WA 98053

Citizen of: United States of America

Post Office Address: Same as above

Full name of sole or Second inventor: GUSTAFSSON, Niklas

Inventor's signature Niklas Gustafsson Date 4/13/99

Residence: 3030 168th Avenue NE
Bellevue, Washington 98008

Citizen of: Sweden

Post Office Address: Same as above

Full name of sole or Third inventor: THRUN, John M.

Inventor's signature John M. Thrun Date 4/13/99

Residence: 1833 211th Way NE
Redmond, WA 98053

Citizen of: United States of America

Post Office Address: Same as above